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Chemistry & Biochemistry

Spring 5-15-2009

Translational Careers

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Recommended Citation

Andrew, Nancy; Burris, John E.; Cech, Thomas R.; Collier, Barry S.; Crowley, William F. Jr.; Gallin, Elaine K.; Kglner, Katrina L.; Kirch, Darrell G.; Leshner, Alan I.; Morris, Cynthia D.; Nguyen, Freddy T.; Oates, Jim; and Sung, Nancy S., "Translational Careers" (2009).

Chemistry & Biochemistry Faculty Contributions. 20.

http://scholar.colorado.edu/chem_facpapers/20

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Translational Careers

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POWERED BY THE COMPUTATIONAL MUSCLE OF BIOINFORMATICS AND THE BROAD PERSPECTIVE of systems biology, advances in biomedical science now have the capacity to transform medicine. Yet to fully realize the health benefits of new scientific insight, we must ensure a vibrant flow of information between the basic sciences and clinical medicine. This takes both systems and people.

The U.S. government has made an unprecedented investment in the infrastructure required to support a new generation of translational researchers. Through the Clinical and Translational Science Award program (CTSA), the National Institutes of Health has created a national consortium that already includes 39 centers in 23 states with an annual funding commitment of \$500 million by 2012. Still in its infancy, this initiative seeks to shorten the time required to translate research results into therapies by many means, including training researchers and providing them with an academic home, developing tools for clinical research, streamlining regulatory processes, and fostering interdisciplinary and interinstitutional research. The potential is clear.

But people are the prerequisite for success. We need an array of innovative investigators whose expertise spans all the disciplines of basic discovery and medical science. As a counterpoint to federal efforts, our private, nonprofit organizations have addressed the human capital need in robust ways, training and funding physicians and other clinical scientists, and piloting models for interdisciplinary graduate training involving biologists, physical and computational scientists and engineers, as well as a wide range of clinical and public health professionals.

Beyond the rigorous research education essential for all scientists, translational scientists who will work at the boundaries of discovery and clinical science must possess an assortment of practical and logistical skills. They must understand the processes by which discoveries turn into therapies, as well as the evolving role of private industry. They must navigate the regulatory environment surrounding human-subjects research, work in teams and share the rewards of their work, and defer financial rewards while spending years in extra training to gain this knowledge. Existing investigators must learn new skills, but we must also attract new people and facilitate productive interactions among them.

The infrastructure envisioned by the CTSA initiative will provide access to resources of enormous value. But the most precious resource for translational research is the insights of individual investigators. All will benefit if these investigators participate in a coherent, communicative community. Incompatible communications infrastructures work against this aim. We need a means to connect people and transmit important information in a way that crosses the boundaries of individual subspecialties, institutions, and professional societies. Toward these ends—and in partnership with each of our organizations, and others that wish to join us—AAAS and *Science* are launching CTSciNet (<http://sciencecareers.org/ctscinet>), the Clinical and Translational Science Network. CTSciNet will combine a career-development Web portal for clinical and translational investigators with an experimental, evolving communications infrastructure, to be launched soon. The articles in CTSciNet will focus on educating trainees and new investigators in translational-research skills, in the spirit of *Science Careers*, which has served scientists since 1995. As it develops, CTSciNet's online professional network will connect clinical and translational science communities worldwide, leading to the formation of scientific relationships among student peers, mentors and protégés, and collaborators in academia and industry.

If it fulfills its potential, translational research will lead to better health for people. But translation is not one-way; the insights gained at the bedside, and from clinical and population-based studies, will spawn hypotheses, enabling scientists to probe the mechanisms of disease in new ways and ultimately enriching basic biology. Therefore, strengthening the support systems for those who will accomplish this multidirectional translation can only be good for science.

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